

### REMARKS

Reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

Applicant has, by this amendment, amended claim 1 and cancelled claim 6. The amendments to claim 1 are fully supported in the as-filed specification. The claims presently pending before the Examiner are 1 and 5.

The carbon dioxide content of the pre-reacted synthetic batches is now included in claim 1.

The desired crystalline structures  $\text{Na}_4\text{CaSiO}_3\text{O}_9$  and  $\text{Na}_2\text{Ca}_2\text{Si}_2\text{O}_7$  are now recited in claim 1 and are supported in Tables 2 and 4 of the specification.

Claims 1 and 5 – 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Szczesniewski et al. (U.S. Patent No. 6358870) in view of Bair (U.S. Patent No. 2220750). This rejection is respectfully traversed.

Applicant's invention recites a method for preparing pre-reacted batches of synthetic silicates which have a carbon dioxide content of between 1% and 0.5%, by weight, to be used later in the manufacture of glass. In the manufacture of such pre-reacted synthetic silicates it is of the utmost importance to remove as much carbon dioxide as possible and also to accelerate the extraction of the carbon dioxide from these pre-reacted synthetic batches.

In Applicant's claimed process for the preparation of pre-reacted synthetic batches requires the rapid and efficient removal of carbon dioxide so that it ultimately has only between 1% and 0.5%, by weight of  $\text{CO}_2$ . This is achieved by Applicant by adding between 5% to 25%, by weight, of cullet to the batch of raw materials.

In the claimed invention, the use of glass cullet provides a means to increase the efficiency of the heat transfer process to the interior of a pellet and thus create oxides which can readily combine with the sand to form synthetic silicates. In the claimed

method the *glass cullet* is never used to promote fusing and it *never melts*. Its presence in the claimed method has nothing whatever to do with its use in glass making. In the claimed method the presence of glass cullet helps to markedly increase the speed of reaction in the creation of synthetic silicates, as compared to the failure of Szczesniewski to disclose the use of cullet.

The cullet, as employed in the claimed invention, acts, in effect, as a catalyst to accelerate the decarbonisation of the batch, down to 1% to 0.5%, by weight of CO<sub>2</sub> and provide the desired crystalline structures, namely, Na<sub>4</sub>CaSiO<sub>3</sub>O<sub>9</sub> and Na<sub>2</sub>Ca<sub>2</sub>Si<sub>2</sub>O<sub>7</sub>.

The primary reference relied upon on by the Examiner Pita-Szczesniewski discloses the preparation of pre-reacted synthetic silicate batches, but does not disclose or suggest the use of cullet or the advantages to be obtained by the addition of cullet to the raw materials, much less the addition of between 5 to 25%, by weight, of cullet.

The Examiner seeks to ameliorate the deficiencies in Pita-Szczesniewski's teaching by combining its disclosure with the disclosure of Bair (U.S. Patent No. 2220750), which teaches *glass manufacture only*, and which is completely *unrelated to the preparation of pre-reacted batches of raw material* for subsequent use in glass manufacture. Bair's teaching of employing broken glass in the form of cullet in order to improve the melting qualities in glass manufacture was well-known in the glass-making art long before the grant of the '750 patent to Bair. In glass making, cullet is added to provide the desired melting properties to the mixture so that the glass is in a fluid state to allow the molten material to then be drawn, cast, or otherwise form sheets or similar bodies of glass which may be smoothed by grinding and polishing.

There is no teaching in Bair of employing cullet in the manufacture of raw materials. Bair's only disclosure of cullet is in a glass making process, which is separate and distinct from the process of manufacturing synthetic silicates. Nor is there any disclosure in Bair of employing cullet to effect the removal of carbon dioxide so that it is present at levels of only 1% to 0.5%, by weight, in order to more rapidly prepare the pre-reacted synthetic batches.

The Examiner in fashioning his rejection under § 103(a) based upon the combination of Pita- Szczesniewski in view of Bair completely misinterprets the teaching of Pita-Szczesniewski to say that it is oriented to the fusion of raw materials to produce glass formulations. It is respectfully submitted that the Examiner should appreciate that the synthetic raw materials of the claimed invention ***cannot be used to produce commercial glass on their own***. On the contrary, the pre-reacted synthetic batches claimed herein must always be added to other materials to produce commercial glass while the foregoing is not true with respect to the Bair patent. In Bair, the raw materials with which the cullet is employed conforms completely to commercial glass formulas. There is no suggestion in Bair of using cullet for anything other than as a flux during glass manufacture. There is no suggestion in Bair of reducing the CO<sub>2</sub> content of raw materials. There is no suggestion in Bair of the claimed crystalline structures.

The Examiner's use of Bair as a secondary reference with respect to the manufacture of raw materials is clearly and totally misplaced. It is respectfully submitted that the use of cullet in the manufacture of glass as taught by Bair would not teach one of ordinary skill in the art that the use of cullet would be of advantage in the manufacture of synthetic raw materials in order to rapidly and efficiently remove carbon dioxide therefrom to a level of only 1% to 0.5%, by weight, during calcination.

It is respectfully submitted that it is only with the benefit of 20/20 hindsight afforded by the teaching of the present disclosure that the use of cullet in the claimed process could possibly thought to be obvious by one of ordinary skill in the art at the time the claimed invention was made.

The claimed invention clearly distinguishes over the combination of art by a preponderance of the evidence. Since the Examiner has failed to establish a *prima facie* case of obviousness based upon an objective evaluation of the art, the rejection has been overcome and should be withdrawn.

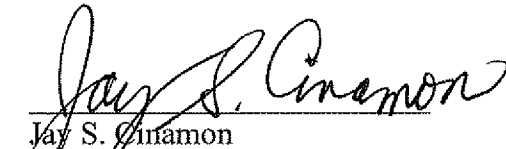
The issuance of a Notice of Allowance is respectfully solicited.

Please charge any fees which may be due and which have not been submitted  
herewith to our Deposit Account No. 01-0035.

Respectfully submitted,

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